

# clearw're

WESTON MANOR  
MA-BOS5089-A / BS13XC671  
15 WESTON AVENUE  
SOMERVILLE, MA 02144

APPLICANT:

**clearw're**

5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100  
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:

WESTON MANOR

HOST #:

BS13XC671

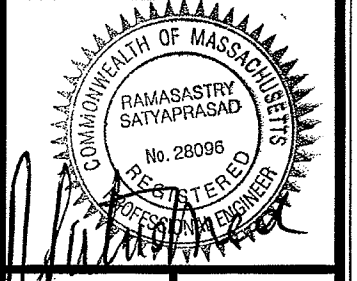
SITE #:

MA-BOS5089-A

CONSTRUCTION DWG'S

1	10/28/09	REV. PER COMMENTS
0	10/14/09	FOR CONSTRUCTION
A	07/10/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



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JOB #: 2900.098

SITE ADDRESS:

15 WESTON AVENUE  
SOMERVILLE, MA 02144

SHEET TITLE:

**TITLE SHEET**

SHEET NUMBER:

T-1



VICINITY MAP (NOT TO SCALE)

TAKE 93 TO ROUTE 60 - MEDFORD/MALDEN AT THE ROTARY TAKE 1ST EXIT TO SALEM STREET (ROUTE 60). MERGE ONTO MAIN STREET AND TAKE THE RT 16 WEST RAMP, MERGE ONTO MYSTIC VALLEY PARKWAY (ROUTE 16). AT THE ROTARY TAKE THE 2ND EXIT ONTO ALEWIFE BROOK PKWY/MA16 WEST. TURN LEFT ONTO BROADWAY. TURN RIGHT ONTO WESTON AVENUE.

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY CONSISTING OF BTS EQUIPMENT, BH AND PANEL ANTENNAS.
2. SIGNALS FROM THE ANTENNA SHALL NOT INTERFERE WITH ANY EXISTING COMMUNICATION SITES. ALL ITEMS SHOWN HEREON ARE EXISTING UNLESS OTHERWISE NOTED.
3. THIS IS AN UNMANNED FACILITY - NO SOLID WASTE. THE SITE WILL CREATE NO TRASH, THUS REQUIRES NO DUMPSTER.
4. DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
5. EMERGENCY POWER SUPPLY IS A CELL PACK BATTERY SOURCE AND NOT A FLAMMABLE LIQUID SOURCE.

## PROJECT DESCRIPTION

APPLICANT / LESSEE  
CLEARWIRE  
5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033

## PROPERTY INFORMATION

MSAG: 15 WESTON AVE.  
SOMERVILLE, MA 02144

OWNER: SOMERVILLE HOUSING AUTHORITY

CONTACT: JOSEPH MACALUSO  
P: 617-625-4522

PARCEL ID: 9-B-3

ZONING: NB- NEIGHBORHOOD BUSYNESS  
RB- RESIDENTIAL B

STRUCTURE TYPE: ROOF TOP EQUIPMENT CABINETS &  
ANTENNAS

COORDINATES: LATITUDE: N 42° 24' 12.51"  
LONGITUDE: W 71° 07' 45.61"

GROUND ELEVATION: 67.0' A.M.S.L.

HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR  
HUMAN HABITATION. HANDICAPPED  
ACCESS NOT REQUIRED

ALL WORK AND MATERIALS SHALL BE PERFORMED AND  
INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF  
THE FOLLOWING CODES AS ADOPTED BY THE LOCAL  
GOVERNING AUTHORITIES.

1. MASSACHUSETTS STATE BUILDING CODE  
- 7TH EDITION
2. NEC 2008

## CODE COMPLIANCE

## CONSULTANTS:

MAXTON TECHNOLOGY, INC.  
241 BOSTON POST RD WEST  
MARLBOROUGH, MA 01752

PHONE: 508-229-4100  
FAX: 508-485-5321

## SITE APPLICATION:

BAY STATE DESIGN, INC.  
ARCHITECTS • ENGINEERS

241 BOSTON POST RD WEST  
MARLBOROUGH, MA 01752

PHONE: 508-229-4100  
FAX: 508-485-5321

STRUCTURAL ENGINEER: BAY STATE DESIGN, INC.  
RAMASASTRY SATYAPRASAD

ELECTRICAL ENGINEER: BAY STATE DESIGN, INC.  
TRICHUR A. VENKATARAMAN

LOCAL POWER COMPANY: NSTAR

SHEET	DESCRIPTION
T-1	TITLE SHEET
G-1	GENERAL NOTES
C-1	50' ABUTTERS MAP
A-1	ROOF TOP PLAN & EQUIPMENT LAYOUT
A-2	EAST ELEVATION
A-3	SOUTH & NORTH ELEVATIONS
A-4	CONSTRUCTION DETAILS
A-5	CABINET DETAILS
S-1	STRUCTURAL DETAILS
E-1	ELECTRICAL & GROUNDING SCHEMATIC
E-2	ANTENNA GROUNDING DETAILS

## SHEET INDEX



**UNDERGROUND  
SERVICE ALERT**

**CALL TOLL FREE  
1-888-DIG-SAFE**

THREE WORKING DAYS BEFORE YOU DIG

## DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING  
DIMENSIONS AND CONDITIONS ON THE JOB SITE AND  
SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING  
OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE  
WORK.

DRIVING DIRECTIONS

PROJECT SUMMARY

PROJECT TEAM

GEN. CONTRACTOR NOTES

GENERAL NOTES

1. GENERAL

- EXAMINE THE SITE CONDITIONS VERY CAREFULLY AND THE SCOPE OF PROPOSED WORK TOGETHER WITH THE WORK OF ALL OTHER TRADES AND INCLUDE IN THE BID PRICE ALL COSTS FOR WORK SUCH AS EQUIPMENT AND WIRING MADE NECESSARY TO ACCOMMODATE THE SYSTEMS SHOWN AND SYSTEMS OF OTHER TRADES.
- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- PERFORM DETAILED VERIFICATION OF WORK PRIOR TO ORDERING THE EQUIPMENT AND COMMENCING CONSTRUCTION. ISSUE A WRITTEN NOTICE TO THE CONSULTANT OF ANY DISCREPANCIES.
- OBTAIN ALL PERMITS, PAY ASSOCIATED FEES AND SCHEDULE INSPECTION.
- PROVIDE ALL LABOR, MATERIAL, EQUIPMENT, INSURANCE AND SERVICES TO COMPLETE THIS PROJECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND PRESENT IT AS FULLY OPERATIONAL TO THE SATISFACTION OF THE OWNER.
- CARRY OUT WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- PRIOR TO BEGINNING WORK COORDINATE ALL POWER AND TELCO WORK WITH THE LOCAL UTILITY COMPANY AS IT MAY APPLY TO THIS SITE. ALL WORK TO COMPLY WITH THE RULES AND REGULATIONS OF THE UTILITIES INVOLVED.
- FABRICATION AND INSTALLATION OF THE COMPLETE ELECTRICAL SYSTEM SHALL BE DONE IN A FIRST CLASS WORKMANSHIP PER NECA STANDARD 1-2000 BY QUALIFIED PERSONNEL EXPERIENCED IN SUCH WORK AND SHALL SCHEDULE THE WORK IN AN ORDERLY MANNER SO AS NOT TO IMPEDE PROGRESS OF THE PROJECT.
- DURING PROGRESS OF THE WORK, MAINTAIN AN ACCURATE RECORD OF THE INSTALLATION OF THE SYSTEMS, LOCATING EACH CIRCUIT PRECISELY AND DIMENSIONING EQUIPMENT, CONDUIT AND CABLE LOCATIONS. UPON COMPLETION OF THE INSTALLATION, TRANSFER ALL RECORD DATA TO BLACK LINE PRINTS OF THE ORIGINAL DRAWINGS AND SUBMIT THESE DRAWINGS AS RECORD DRAWINGS TO THE CONSULTANT.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL, OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- CONTRACTOR SHALL CONSULT MANUFACTURER'S PLANS, SHOP DRAWINGS AND SPECS FOR INDOOR/OUTDOOR EQUIPMENT LOCATION AND INSTALLATION. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN ACCESSIBLE AREAS ONLY.
- COORDINATE EXACT TELEPHONE REQUIREMENTS AND SERVICE ROUTING WITH LOCAL TELEPHONE SERVICE IMMEDIATELY UPON AWARD OF CONTRACT.

2. BASIC MATERIALS AND METHODS

- ALL ELECTRICAL WORK SHALL CONFORM TO THE EDITION OF THE NEC ACCEPTED BY THE LOCAL JURISDICTION AND TO THE APPLICABLE LOCAL CODES AND REGULATIONS.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW. MATERIALS AND EQUIPMENT SHALL BE THE STANDARD PRODUCTS OF MANUFACTURER'S CURRENT DESIGN. ANY FIRST-CLASS PRODUCT MADE BY A REPUTABLE MANUFACTURER MAY BE USED PROVIDED IT CONFORMS TO THE CONTRACT REQUIREMENTS AND MEETS THE APPROVAL OF THE CONSULTANT AND THE OWNER.
- ARRANGE CONDUIT, WIRING, EQUIPMENT AND OTHER WORK GENERALLY AS SHOWN, PROVIDING PROPER CLEARANCES AND ACCESS. CAREFULLY EXAMINE ALL CONTRACT DRAWINGS AND FIT WHERE DEPARTURES ARE PROPOSED BECAUSE OF FIELD CONDITIONS OR OTHER CAUSES. PREPARE AND SUBMIT DETAILED DRAWINGS FOR ACCEPTANCE.
- THE CONTRACT DRAWINGS ARE GENERALLY DIAGRAMMATIC AND ALL OFFSETS, BENDS, FITTINGS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. PROVIDE ALL SUCH ITEMS AS MAY BE REQUIRED TO FIT THE WORK TO THE CONDITIONS.
- MAINTAIN ALL CLEARANCES AS REQUIRED BY NEC.
- SEAL AROUND CONDUITS AND AROUND CONDUCTORS WITHIN CONDUITS ENTERING THE PREFABRICATED SHELTER/CABINETS WHERE PENETRATION OCCURS WITH A SILICONE SEALANT TO PREVENT MOISTURE PENETRATION INTO BUILDING/SHELTER.
- SILICONE SEAL AROUND ALL BOLTS AND SCREWS USED TO SECURE EQUIPMENT TO EXTERIOR OF BUILDING.

3. RACEWAYS AND BOXES

- ALL CONDUIT SHALL BE UL LABELED.
- ALL EMPTY CONDUITS INSTALLED FOR FUTURE USE SHALL HAVE A PULL CORD.
- SHEET METAL BOXES SHALL CONFORM TO NEMA OS1; CAST-METAL BOXES SHALL CONFORM TO NEMA B1 AND SHALL BE SIZED IN ACCORDANCE WITH NEC UNLESS NOTED OTHERWISE.
- GROUNDING
  - ALL SAFETY GROUNDING OF THE ELECTRICAL EQUIPMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH THE CURRENT REVISION NEC.
  - ALL GROUND LUG AND COMPRESSION CONNECTIONS SHALL BE COATED WITH ANTI-OXIDANT AGENT, SUCH AS NO-OX, NOALOX, PENETROX OR KOPRSHIELD.
  - GROUND ALL EXPOSED METALLIC OBJECTS ON BUILDING EXTERIOR INCLUDING BUILDING TIE DOWN BRACKETS.
  - PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
  - DO NOT INSTALL GROUND RING OUTSIDE OF PROPERTY LINE.
  - REMOVE ALL PAINT AND CLEAN ALL DIRT FROM SURFACES REQUIRING GROUND CONNECTIONS. REPAINT TO MATCH AFTER CONNECTION IS MADE TO MAINTAIN CORROSION RESISTANCE.
  - ALL EXTERIOR GROUNDING CONDUCTORS INCLUDING EXTERIOR GROUND RING SHALL BE #2 AWG SOLID BARE TINNED COPPER UNLESS NOTED OTHERWISE. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. THE RADIUS OF ANY BEND SHALL NOT BE LESS THAN 8" AND THE ANGLE OF ANY BEND SHALL NOT EXCEED 90°. GROUNDING CONDUCTORS SHALL BE ROUTED DOWNWARD TOWARD THE BURIED GROUND RING.
  - BOND ALL EXTERIOR CONDUITS, PIPES AND CYLINDRICAL METALLIC OBJECTS WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP OR A BURNDY GAR 3900BU SERIES CLAMP ONLY. NO SUBSTITUTES ACCEPTED.
  - ALL GROUND CONNECTIONS SHALL BE APPROVED FOR THE METALS BEING CONNECTED.
  - ALL EXTERNAL GROUND CONNECTIONS SHALL BE EXOTHERMICALLY WELDED. ALL EXOTHERMIC WELDS TO EXTERIOR GROUND RING SHALL BE THE PARALLEL TYPE, EXCEPT FOR THE GROUND RODS WHICH ARE TEE EXOTHERMIC WELDS. REPAIR ALL GALVANIZED SURFACES THAT HAVE BEEN DAMAGED BY EXOTHERMIC WELDING. USE SPRAY GALVANIZER SUCH AS HOLUB LECTROSOL #15-501.
  - CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE BURIED GROUND RING IS INSTALLED SO THE REPRESENTATIVE CAN INSPECT THE GROUND RING BEFORE IT IS BACKFILLED WITH SOIL.
  - FOR METAL FENCE POST GROUNDINGS, USE A HEAVY DUTY TYPE GROUNDING CLAMP OR EXOTHERMIC WELD CONNECTION TO POST. GROUND ALL FENCE POSTS WITHIN 6" OF EQUIPMENT.
  - WHERE MECHANICAL CONNECTORS (TWO-HOLE OR CLAMP) ARE USED, APPLY A LIBERAL PROTECTIVE COATING OF AN ANTI-OXIDE COMPOUND SUCH AS "NO OXIDE A" BY DEARBORN CHEMICAL COMPANY ON ALL CONNECTORS.

PROJECT INFORMATION

5. COAXIAL ANTENNA CABLE NOTES

- THE COAXIAL ANTENNA CABLE INSTALLER SHALL BE RESPONSIBLE FOR PERFORMING AND SUPPLYING CLEARWIRE WITH TYPE-WRITTEN SWEEP TESTS (ANTENNA RETURN LOSS TEST). THIS TEST SHALL BE PERFORMED TO THE SPECIFICATIONS AND PARAMETERS OUTLINED BY THE CLEARWIRE RADIO FREQUENCY (RF) ENGINEER. THIS TEST SHALL BE PERFORMED PRIOR TO FINAL ACCEPTANCE PF SITE.
- VAPOR WRAP WILL BE USED TO SEAL ALL CONNECTIONS.
- ALL COAXIAL CABLE WILL BE GROUNDED PRIOR TO ENTERING THE EQUIPMENT SPACE AND AS SPECIFIED IN THE ELECTRICAL DRAWINGS.
- ALL MAIN TRANSMISSION CABLE WILL BE TERMINATED AT A NEW/EXISTING POLYPHASE SURGE PROTECTOR LOCATED WITH THE EQUIPMENT SPACE.
- ALL COAXIAL CABLE WILL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE AT DISTANCES NOT TO EXCEED 4'-0" WITH HARDWARE SPECIFIED IN THE COAXIAL CABLE ROUTING DETAILS.
- ANTENNA CABLE LENGTHS HAVE BEEN PROVIDED BY OTHERS. CABLE LENGTHS LISTED ARE APPROXIMATE AND ARE NOT INTENDED TO BE USED FOR FABRICATION DUE TO FIELD CONDITIONS. ACTUAL ANTENNA CABLE LENGTHS REQUIRED MAY VARY FROM LENGTHS TABULATED. CONTRACTORS MUST FIELD VERIFY ANTENNA CABLE LENGTHS PRIOR TO ORDER.
- ALL MAIN CABLES WILL BE COLOR CODED AT THREE (3) LOCATIONS:
  - AT ANTENNA PRIOR TO JUMPER
  - PRIOR TO ENTERING EQUIPMENT CABINET, AT CABLE ENTRY PORT
  - INTERIOR SIDE OF EQUIPMENT CABINET, AT CABLE ENTRY PORT
- ALL MAIN CABLES WILL BE GROUNDED AT:
  - AT ANTENNA MOUNTING PIPE
  - AT CABLE SUPPORT ASSEMBLY ON ROOF
  - PRIOR TO ENTERING EQUIPMENT CABINET
- ALL TOP JUMPERS WILL BE MADE UP OF 1/2" DIA. LDF. THE CONTRACTOR SHALL USE ALL REASONABLE EFFORTS TO MINIMIZE THE LENGTH OF THE JUMPERS

LEGEND

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	NON-FUSIBLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
	SURFACE MOUNTED PANEL BOARD
	TRANSFORMER
	KILOWATT HOUR METER
	DENOTES CABLE OR CONDUIT TURNING UP IN PLAN VIEW
	DENOTES CABLE OR CONDUIT TURNING DOWN IN PLAN VIEW
	JUNCTION BOX
	PULL BOX TO NEC/TELCO STANDARDS
	OVERHEAD UTILITIES
	UNDERGROUND TELCO
	UNDERGROUND POWER
	DENOTES REFERENCE NOTE
	EXOTHERMIC WELD CONNECTION
	MECHANICAL CONNECTION
	GROUND ROD
	GROUND ROD WITH INSPECTION SLEEVES
	GROUND BAR
	PIN AND SLEEVE RECEPTACLE
	GROUND CONDUCTOR

ABBREVIATIONS

AFG	ABOVE FINISHED GRADE
AIC	AMPERE INTERRUPTING CAPACITY
BFG	BELOW FINISHED GRADE
C	CONDUIT
CRGB	CELL REFERENCE GROUND BAR
CU	COPPER
C/W	COMPLETE WITH
D.T.T.	DRY TYPE TRANSFORMER
DIA.	DIAMETER
EC	EMPTY CONDUIT
EMT	ELECTRO MAGNETIC TUBING
G	GROUND
GE	GROUNDING ELECTRODE
GEC	GROUNDING ELECTRODE CONDUCTOR
GRC	GALVANIZED RIGID CONDUIT
MTS	MANUAL TRANSFER SWITCH
NEC	NATIONAL ELECTRICAL CODE
O/H	OVERHEAD
PDC	POWER DISTRIBUTION CABINET
PVC	POLYVINYL CHLORIDE
RNC	RIGID NON-METALLIC CONDUIT
SCHED	SCHEDULE
SD	SERVICE DISCONNECT SWITCH
SE	SERVICE ENTRANCE
SN	SOLID NEUTRAL
TGB	TELCO GROUND BAR
TEGB	TOWER EXIT GROUND BAR
TR	TRANSFORMER
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
U/G	UNDERGROUND
WP	WEATHERPROOF - NEMA 3R
W	WITH

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WESTON MANOR

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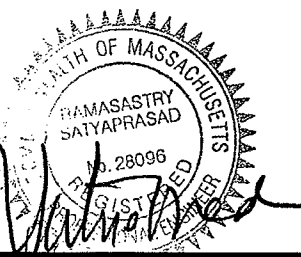
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CONSTRUCTION DWG'S

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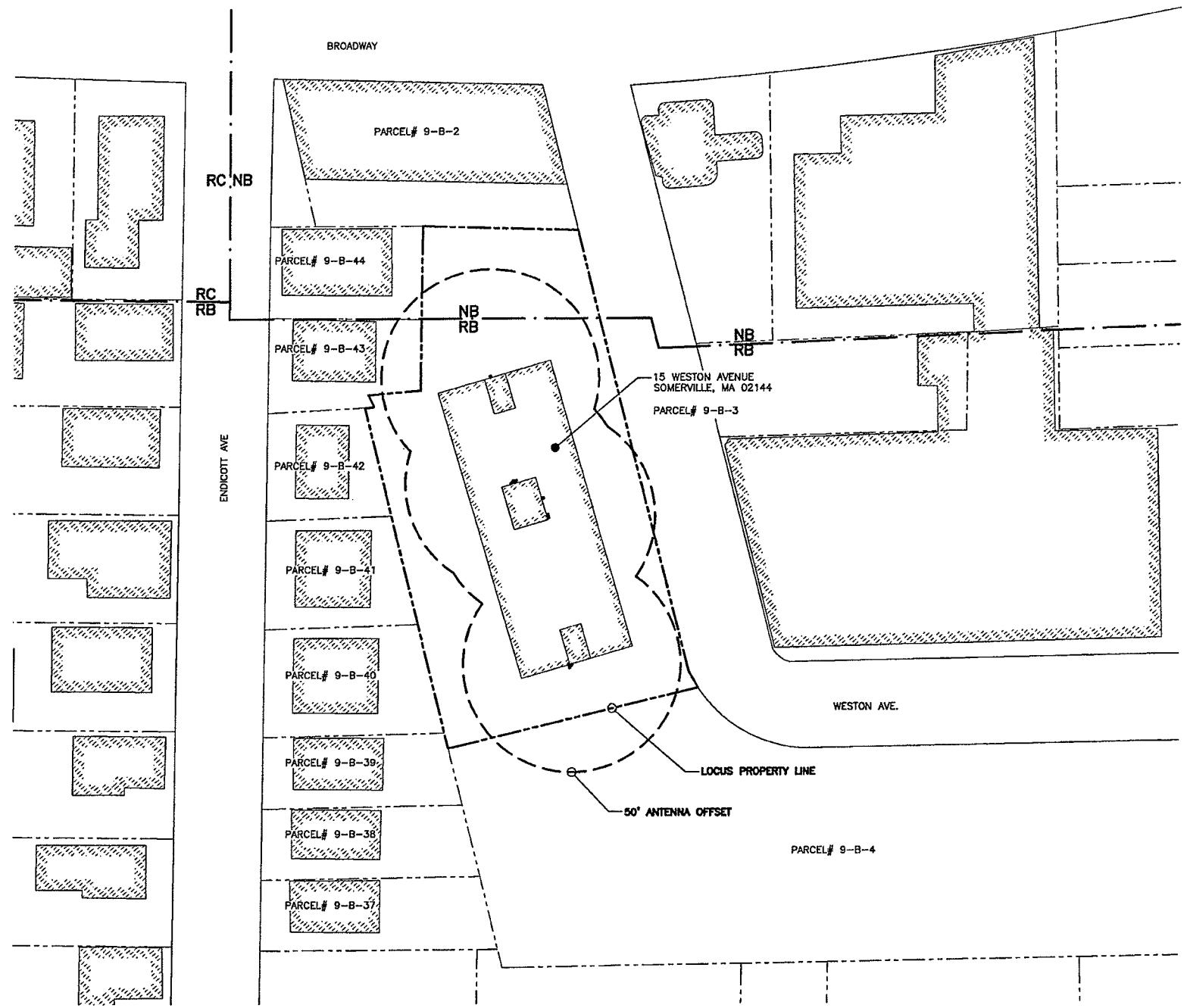
15 WESTON AVENUE  
SOMERVILLE, MA 02144

SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

G-1



50' ABUTTERS MAP  
SCALE: 1/32"=1'  
1  
0 16' 32' 64'  
SCALE: 1/32" = 1'-0"

ZONING DISTRICTS TABLE	
NB	NEIGHBORHOOD BUSINESS
RB	RESIDENCE B
RC	RESIDENCE C

LEGEND TABLE	
---	50' ANTENNA OFFSET
---	LOCUS PROPERTY LINE
---	(E) PROPERTY LINE
---	(E) RIGHT OF WAY
---	(E) ZONING BOUNDARY

NOTE:  
ABUTTERS PLAN IS NOT THE RESULT OF A SURVEY. IT IS BASED ON INFORMATION OBTAINED FROM THE TOWN OF SOMERVILLE WEB SITE, PARCEL MAP #9 DATED JANUARY 10, 2008. ALL INFORMATION SHOWN IS APPROXIMATE ONLY AND SUBJECT TO ANY CONDITION THAT A SURVEY MAY REVEAL.

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SUITE 300  
KIRKLAND, WA 98033

**MAXTON**  
MAXTON TECHNOLOGY, INC.  
**BAY STATE DESIGN**  
BAY STATE DESIGN, INC.  
Architects - Engineers  
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PROFESSIONAL STAMP  
COMMONWEALTH OF MASSACHUSETTS  
HAMASAstry SAIYAPRASAD  
No. 28096  
REGISTERED PROFESSIONAL ENGINEER

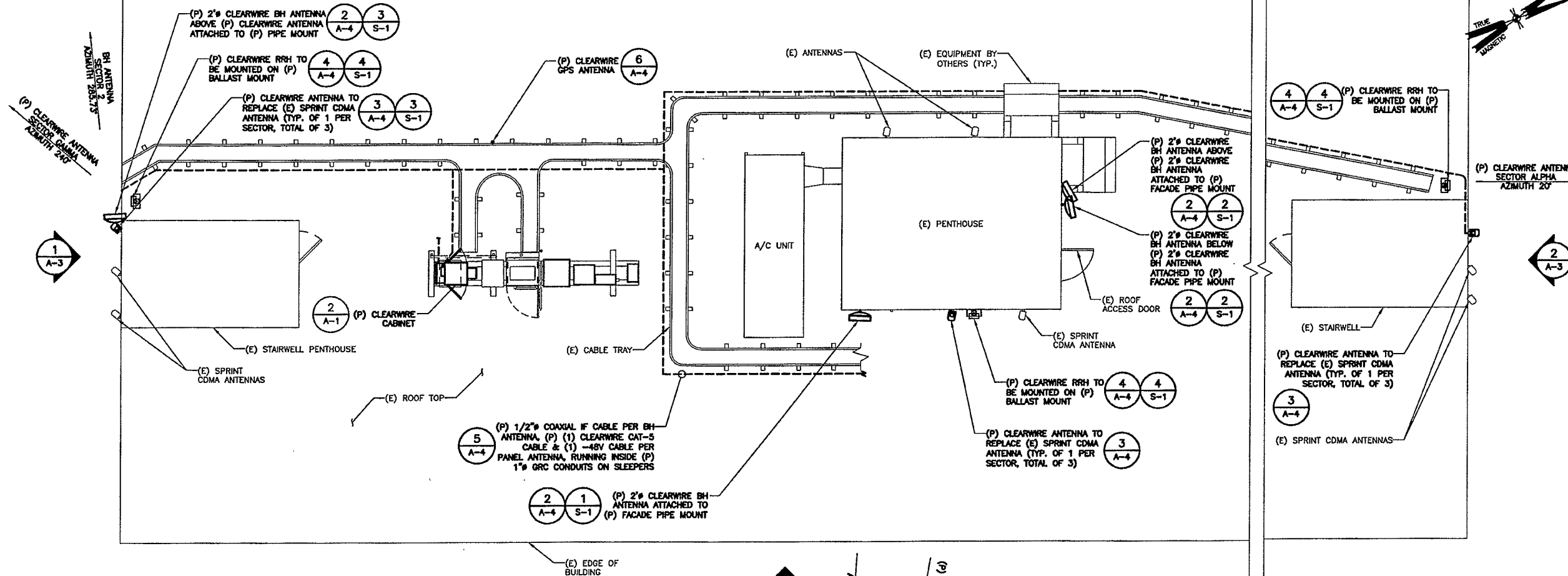
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SHEET TITLE:  
**50' ABUTTERS  
MAP**

SHEET NUMBER:  
**C-1**

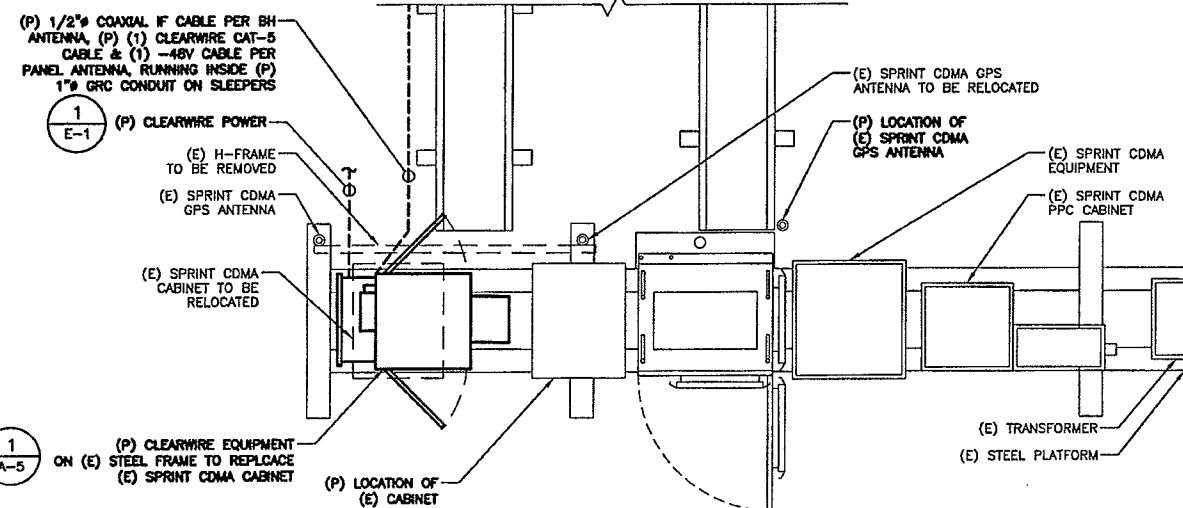


ROOF TOP PLAN

SCALE: 3/16" = 1'-0"

0 2'-8" 5'-4" 10'-8"

SCALE: 3/16" = 1'-0"



EQUIPMENT LAYOUT

SCALE: 1/2" = 1'-0"

0 1' 2' 4'

SCALE: 1/2" = 1'-0"

(P) = PROPOSED  
(E) = EXISTING

NOTE:  
CLEARWIRE BH ANTENNAS SHOWN  
TO THE SIDE FOR CLARITY.

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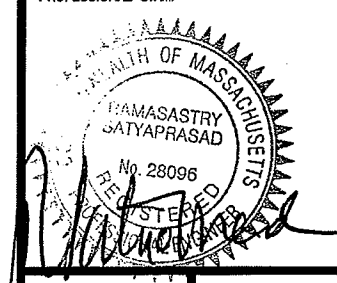
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ROOF TOP PLAN  
& EQUIPMENT  
LAYOUT

SHEET NUMBER:

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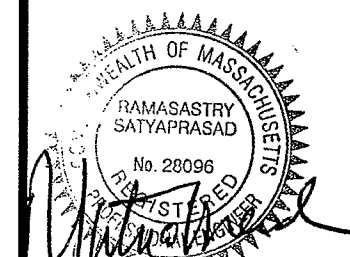
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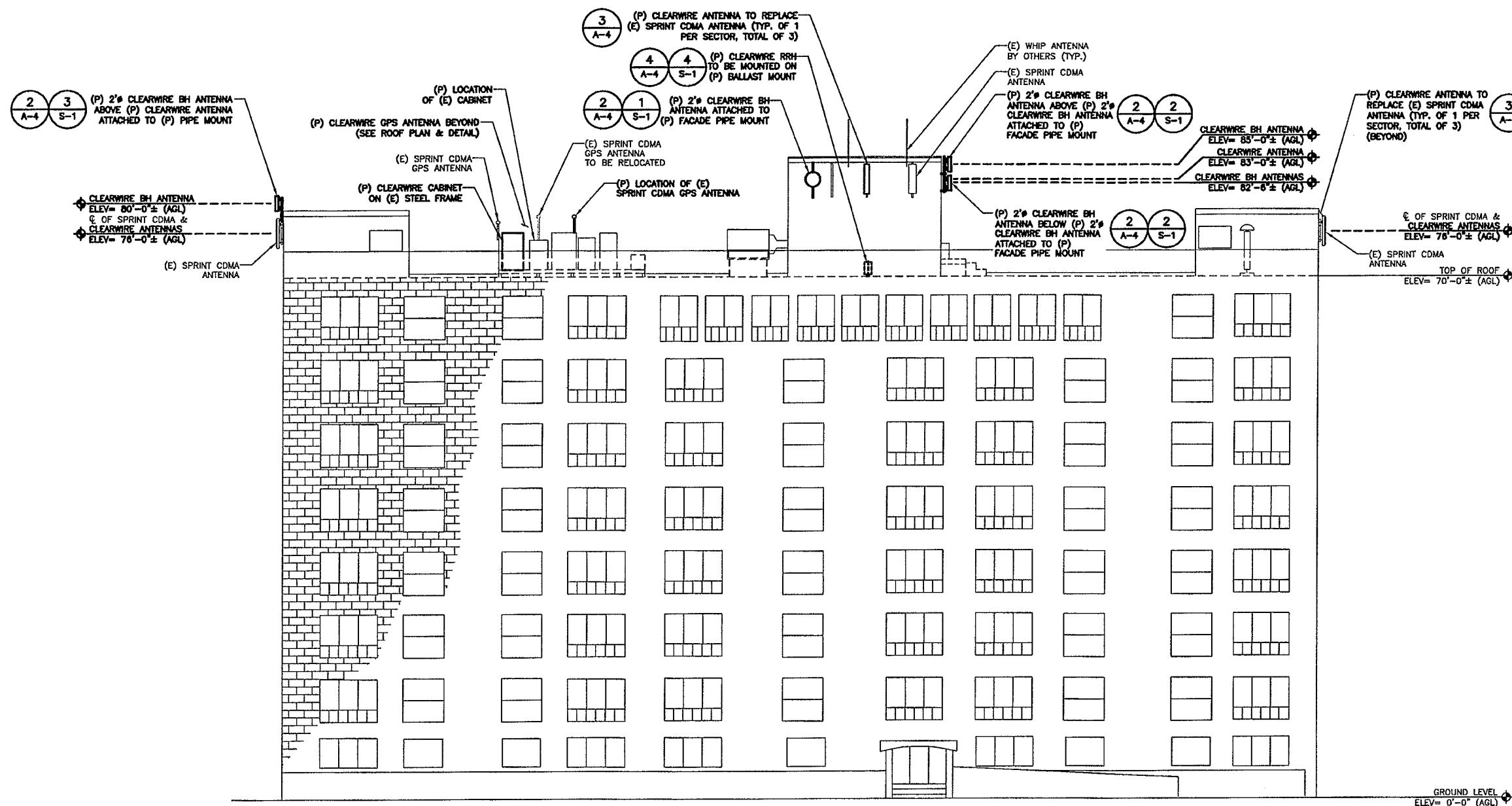
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SHEET TITLE:

EAST ELEVATION

SHEET NUMBER:

A-2



EAST ELEVATION

SCALE: 1/8" = 1'-0"

1

0 4'-0" 8'-0" 16'-0"

SCALE: 1/8" = 1'-0"

(P) = PROPOSED  
(E) = EXISTING

APPLICANT:

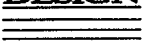
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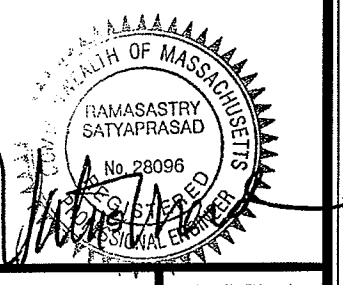
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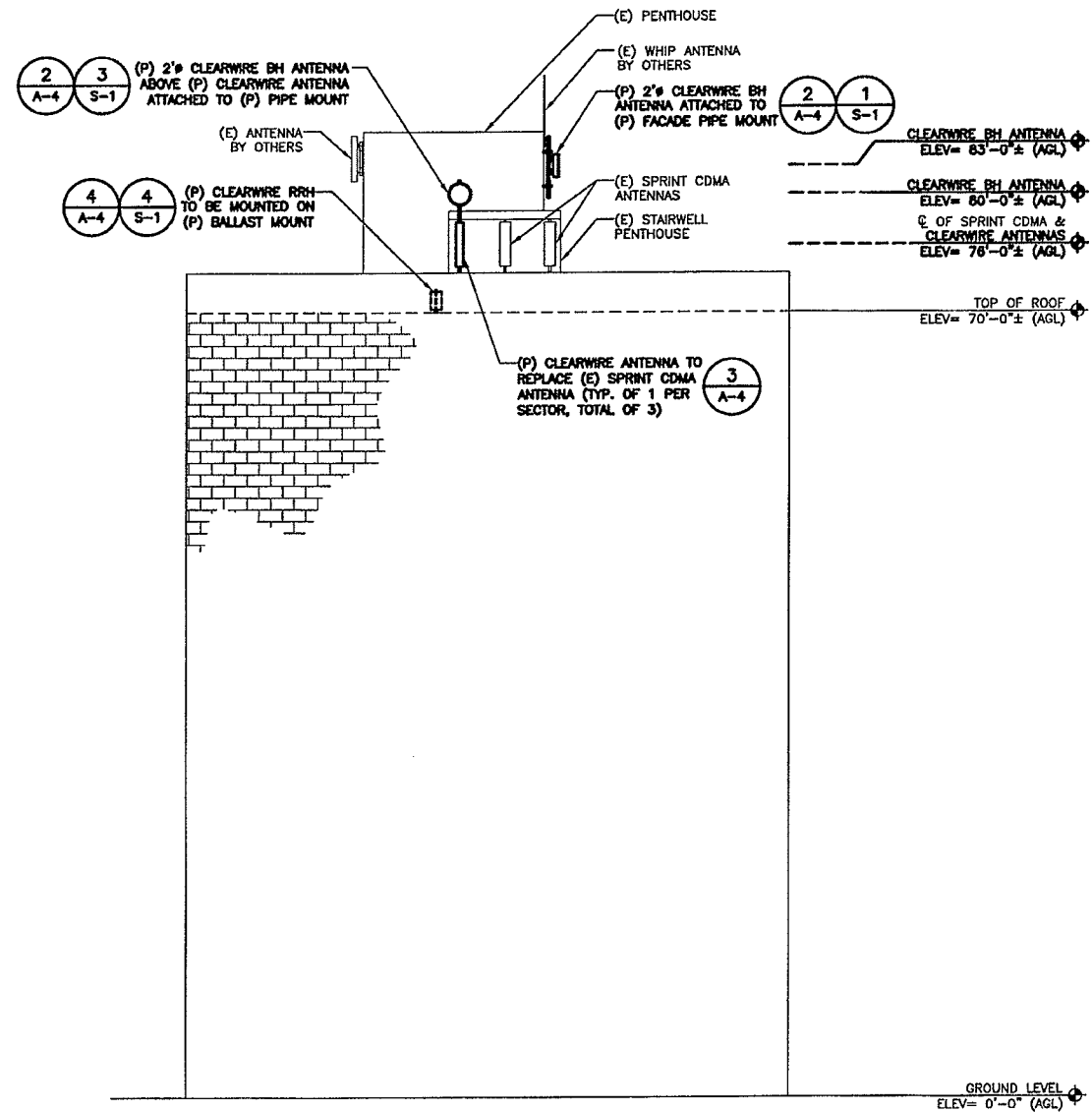
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SHEET TITLE:

**SOUTH & NORTH  
ELEVATIONS**

SHEET NUMBER:

**A-3**

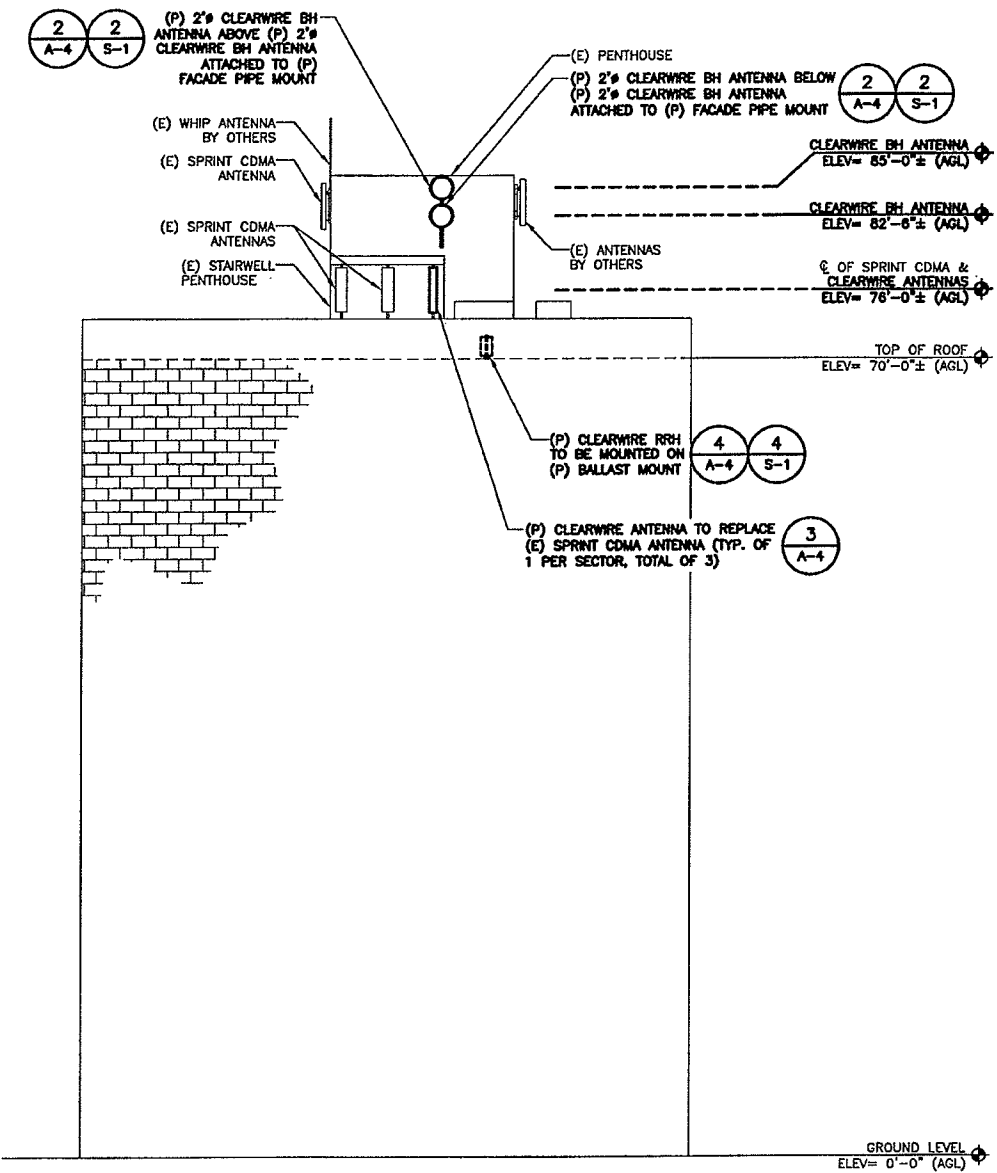


**SOUTH ELEVATION**

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

SCALE: 1/8" = 1'-0"



**NORTH ELEVATION**

SCALE: 1/8" = 1'-0"

0 4'-0" 8'-0" 16'-0"

SCALE: 1/8" = 1'-0"

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(E) = EXISTING

# CLEARWIRE ANTENNA INFORMATION

SECTOR	ANTENNA	BAND #	AZIMUTH	MAKER	MODEL	QTY.	DOWNTILT	RAD CENTER FT. AGL	POWER CABLE SIZE	CAT-5 CABLE SIZE	COAXIAL IF CABLE SIZE	COAX CABLE SIZE	RET CABLE SIZE
A	RED	-	20°	ARGUS	LLPX310R	1	0	76'-0"	5/8"	1/2"			5/16"
B	BLUE	-	120°	ARGUS	LLPX310R	1	0	83'-0"	5/8"	1/2"			5/16"
C	YELLOW	-	240°	ARGUS	LLPX310R	1	0	76'-0"	5/8"	1/2"			5/16"
1	2" BH ANT.	18	8.20°	DRAGONWAVE	VHLP2	1	0	82'-6"			1/2"		
2	2" BH ANT.	18	285.73°	DRAGONWAVE	VHLP2	1	0	80'-0"			1/2"		
3	2" BH ANT.	18	114.15°	DRAGONWAVE	VHLP2	1	0	83'-0"			1/2"		
4	2" BH ANT.	18	350.42°	DRAGONWAVE	VHLP2	1	0	85'-0"			1/2"		
	1 GPS	-	-	PCTEL	-	1	0	-				1/2"	

GPS ANTENNA LOCATION OPTIONS: (1) CABLE TRAY; (2) ANTENNA MAST; (3) H-FRAME; FIELD VERIFY

\*MW INFORMATION BASED ON MW INTERCONNECT DATA DATED 09/24/09

LABEL MARKINGS SHALL BE PLACED AT:

- WITHIN 12" OF CABLE AT BOTH ENDS
  - AT/NEAR TOWER MGB
  - EITHER PRIOR TO ENTRY INTO THE CABINET FOR A CABLE SUPPORT BRIDGE
- \* COORDINATE BACKHAUL INSTALLATION WITH FINAL ENGS

## MICROWAVE LINE COLOR CHART

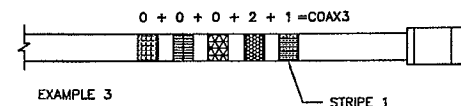
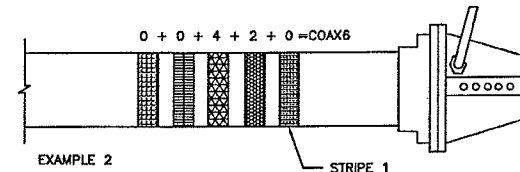
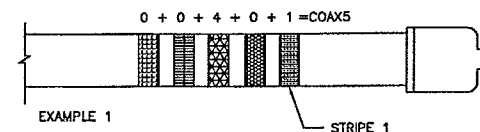
CABLE	LSB				MSB
	STRIPE 1 (1)*	STRIPE 2 (2)	STRIPE 3 (4)	STRIPE 4 (8)	STRIPE 5 (16)
1	YELLOW	PURPLE	PURPLE	PURPLE	PURPLE
2	PURPLE	YELLOW	PURPLE	PURPLE	PURPLE
3	YELLOW	YELLOW	PURPLE	PURPLE	PURPLE
4	PURPLE	PURPLE	YELLOW	PURPLE	PURPLE

## CLEARWIRE ANTENNA INFORMATION & COLOR CODING

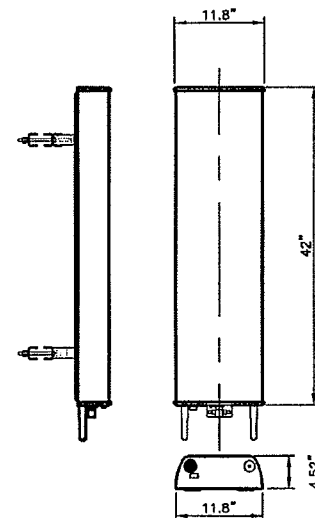
SCALE: N.T.S.

MSB-----LSB

16 8 4 2 1



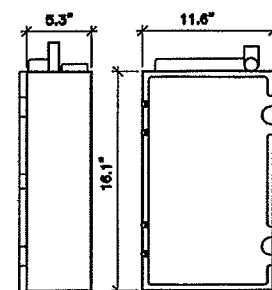
NOTE: STRIPE 1 SHALL BE PLACED CLOSEST TO THE CONNECTOR END OF THE CABLE.



LLPX310R ARGUS PANEL ANTENNA	
ANTENNA DIMENSIONS	42"x11.8"x4.5"
ANTENNA WEIGHT	28.65 LBS.

## LLPX310R ARGUS PANEL ANTENNA (TYP.)

SCALE: N.T.S.



MANUFACTURER: SAMSUNG  
HEIGHT: 16.1"  
WIDTH: 11.6"  
DEPTH: 5.3"  
WEIGHT: 35 LBS

## SAMSUNG REMOTE RADIO HEAD (RRH)

SCALE: N.T.S.

UNISTRUT P1000 X 6"  
ATTACH W/ (2) 3/8" EXPANSION ANCHOR (MIN. EMB. DEPTH = 1 5/8")  
EMT CONDUIT APPROPRIATE SIZE HANGERS (PAINTED TO MATCH)

VERTICAL RUN

HOLD DOWN CLAMP FASTENED TO 4" X 4" WITH 3/8" X 2 1/2" GALVANIZED SCREWS.

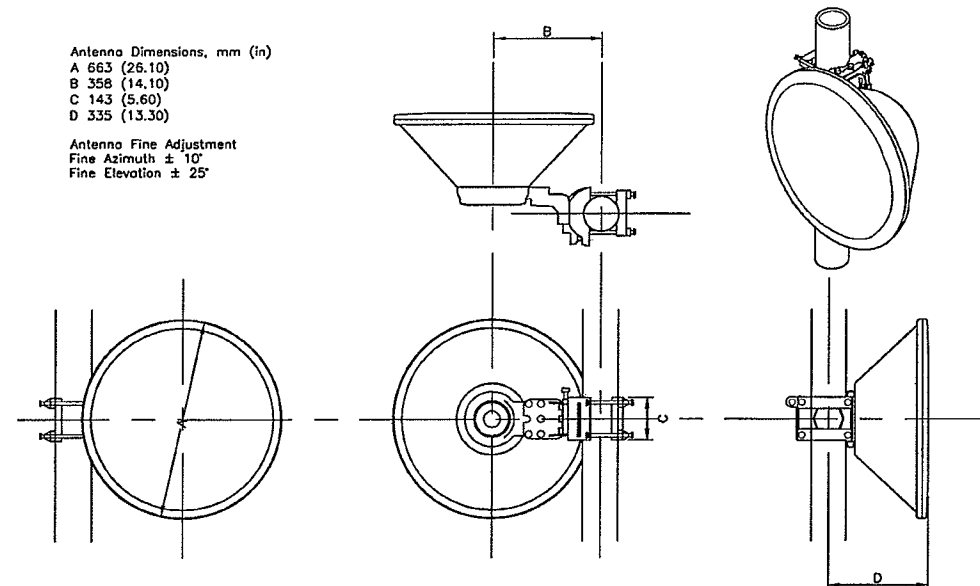
HORIZONTAL RUN ON ROOFTOP

## EMT CONDUIT MOUNTING DETAIL

SCALE: N.T.S.

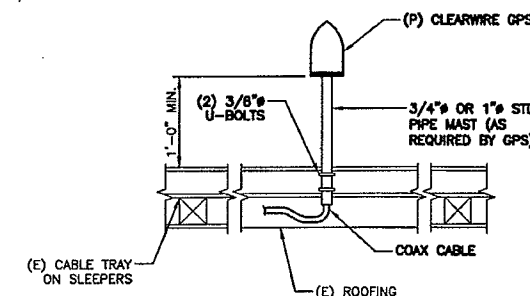
Antenna Dimensions, mm (in)  
A 663 (26.10)  
B 358 (14.10)  
C 143 (5.60)  
D 335 (13.30)

Antenna Fine Adjustment  
Fine Azimuth ± 10°  
Fine Elevation ± 25°



## 2" DRAGONWAVE VHLP2 BACKHAUL ANTENNA (TYP.)

SCALE: N.T.S.



ELEVATION

NOTES:

- LOCATION OF ANTENNA MUST HAVE CLEAR VIEW OF SKY AND CANNOT HAVE ANY BLOCKAGES EXCEEDING 25% OF THE SURFACE AREA OF A HEMISPHERE AROUND THE GPS ANTENNA.
- ALL GPS ANTENNA LOCATIONS MUST BE ABLE TO RECEIVE CLEAR SIGNALS FROM A MINIMUM OF FOUR (4) SATELLITES. VERIFY WITH HANDHELD GPS BEFORE FINAL LOCATION OF GPS ANTENNA.

## GPS ANTENNA PIPE MOUNT

SCALE: N.T.S.

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100  
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:

WESTON MANOR

HOST #:

BS13XC671

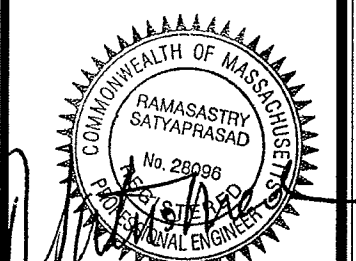
SITE #:

MA-BOS5089-A

## CONSTRUCTION DWG'S

1	10/28/09	REV. PER COMMENTS
0	10/14/09	FOR CONSTRUCTION
A	07/10/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



DRAWN BY: KO

CHECKED BY: JT/RS

JOB #:

2900.098

SITE ADDRESS:

15 WESTON AVENUE  
SOMERVILLE, MA 02144

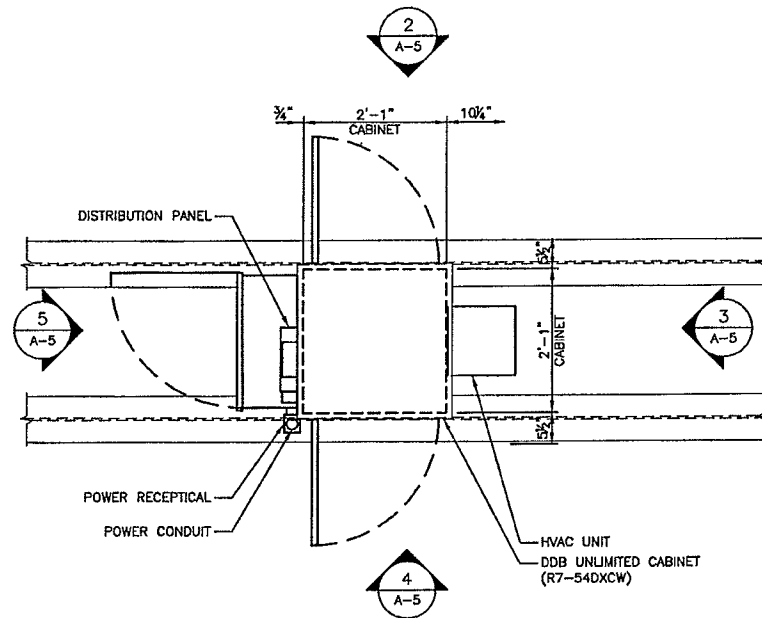
SHEET TITLE:

## CONSTRUCTION DETAILS

SHEET NUMBER:

A-4

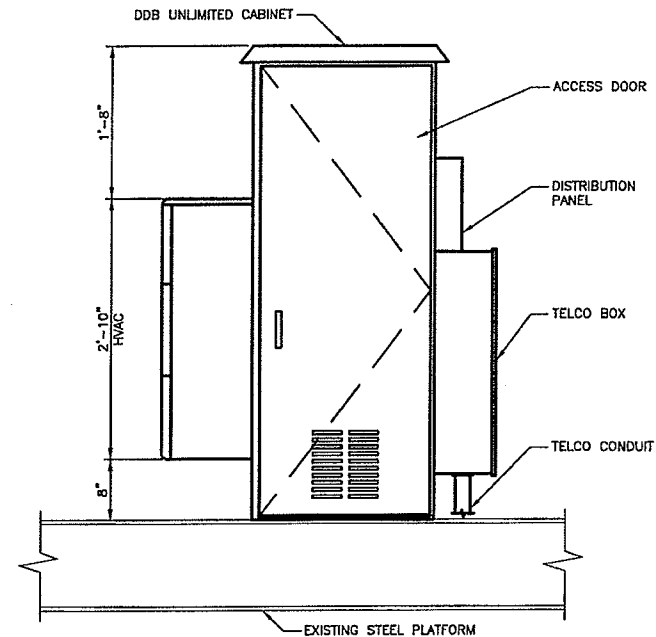
(P) = PROPOSED  
(E) = EXISTING



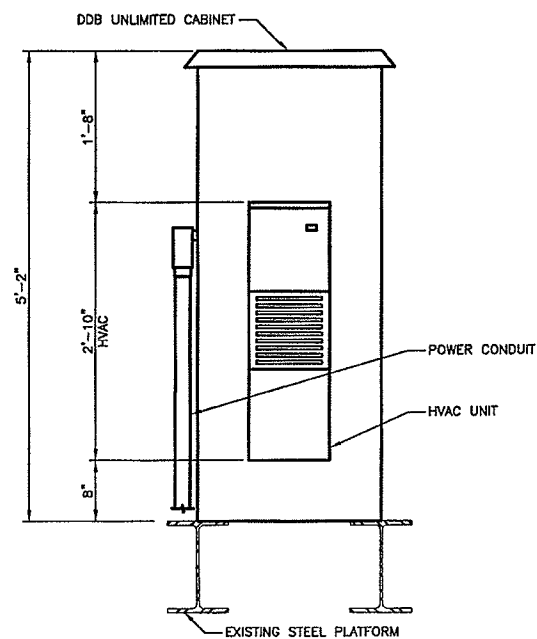
**EQUIPMENT PLAN**  
SCALE: 3/4" = 1'-0" **1**

**BATTERY INFORMATION:**  
LONG DURATION SERIES -- TEL 12-70  
1. FLAME E-ARRESTING ONE-WAY PRESSURE-RELIEF VENT FOR SAFETY AND LONG LIFE.  
2. THERMALLY WELDED CASE-TO-COVER BOND TO ENSURE A LEAK-PROOF SEAL.  
3. FLAME-RETARDANT POLYPROPYLENE CASE AND COVER COMPLIANT WITH UL94 V-0 WITH AN OXYGEN LIMITING INDEX OF GREATER THAN 28.  
4. COMPLIES WITH UL 1778, 924, 1989 AND 94 V-0.  
5. UL-RECOGNIZED COMPONENT.  
6. NOT RESTRICTED FOR SURFACE TRANSPORT--CLASSIFIED AS NON-HAZARDOUS MATERIAL AS RELATED TO DOT-CFR TITLE 49 PARTS 171-189.

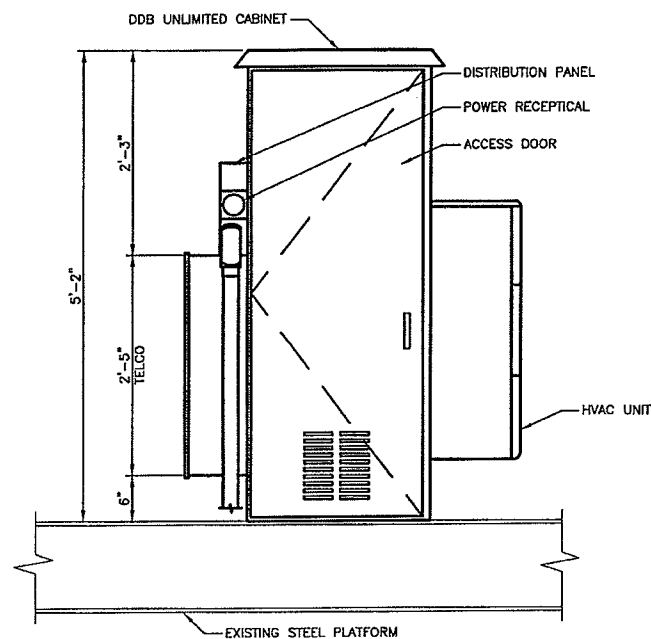
TEL 12-70 SPECIFICATIONS:  
CELLS PER UNIT = 6  
VOLTAGE PER UNIT = 12.84  
WEIGHT = 55 LBS  
ELECTROLYTE = ABSORBED H2SO4 / SG = 1.300  
VOLUME: 6.02" X 10.17" X 6.65" = 542.40 cu in  
MAX = 4



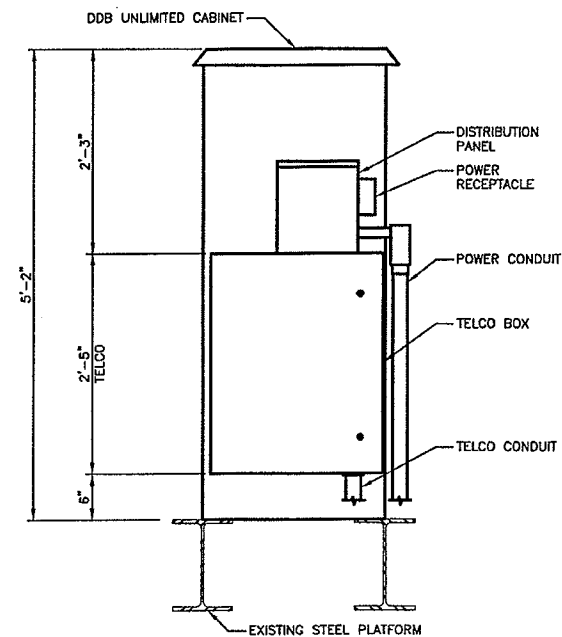
**CABINET ELEVATION (BACK)**  
SCALE: 1" = 1'-0" **2**



**CABINET ELEVATION (LEFT)**  
SCALE: 1" = 1'-0" **3**



**CABINET ELEVATION (FRONT)**  
SCALE: 1" = 1'-0" **4**



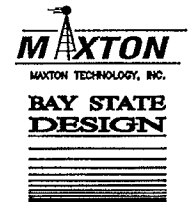
**CABINET ELEVATION (RIGHT)**  
SCALE: 1" = 1'-0" **5**

(P) = PROPOSED  
(E) = EXISTING

APPLICANT:

**clearw're**

5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100  
Methuen, MA 01752 Fax: 508-485-5321

SITE NAME:

WESTON MANOR

HOST #:

BS13XC671

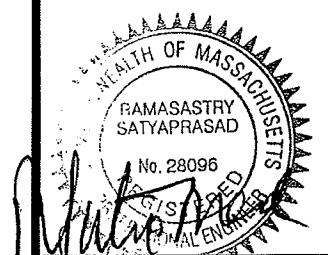
SITE #:

MA-BOS5089-A

CONSTRUCTION DWG'S

1	10/28/09	REV. PER COMMENTS
0	10/14/09	FOR CONSTRUCTION
A	07/10/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP



DRAWN BY: KO

CHECKED BY: JT/RS

JOB #:

2900.098

SITE ADDRESS:

15 WESTON AVENUE  
SOMERVILLE, MA 02144

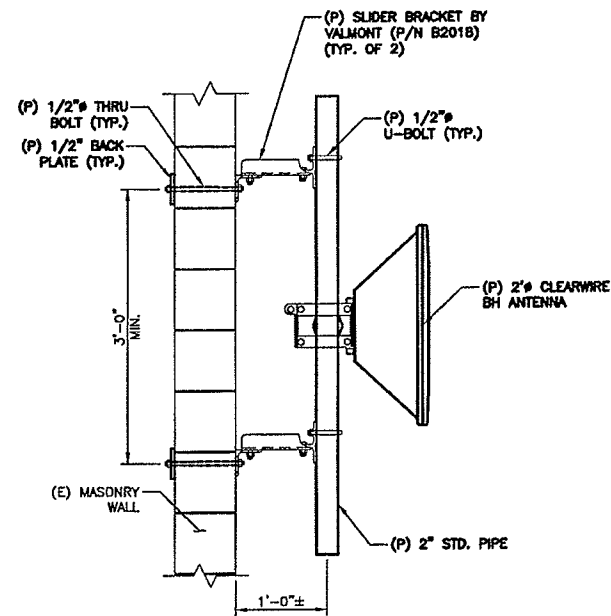
SHEET TITLE:

CABINET DETAILS

SHEET NUMBER:

A-5

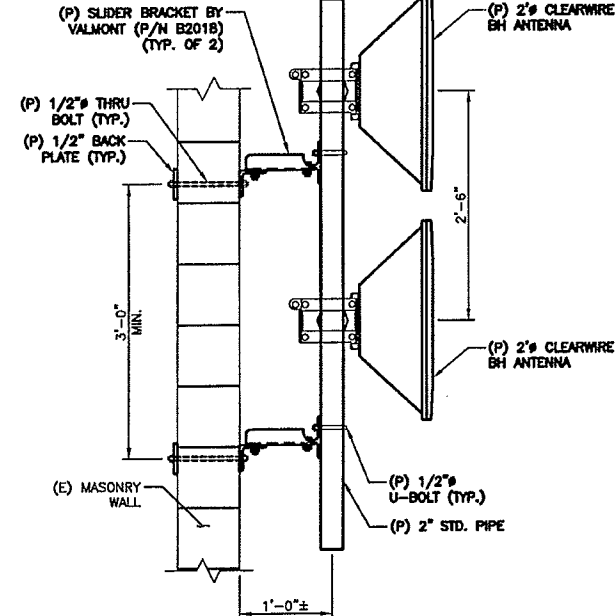




**BH ANTENNA  
PIPE MOUNT DETAIL**

SCALE: 1" = 1'-0"

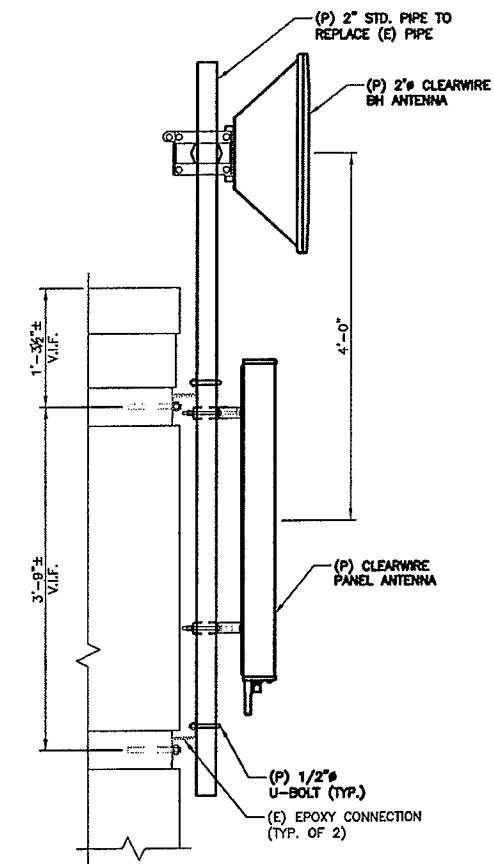
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**BH ANTENNA  
PIPE MOUNT DETAIL**

SCALE: 1" = 1'-0"

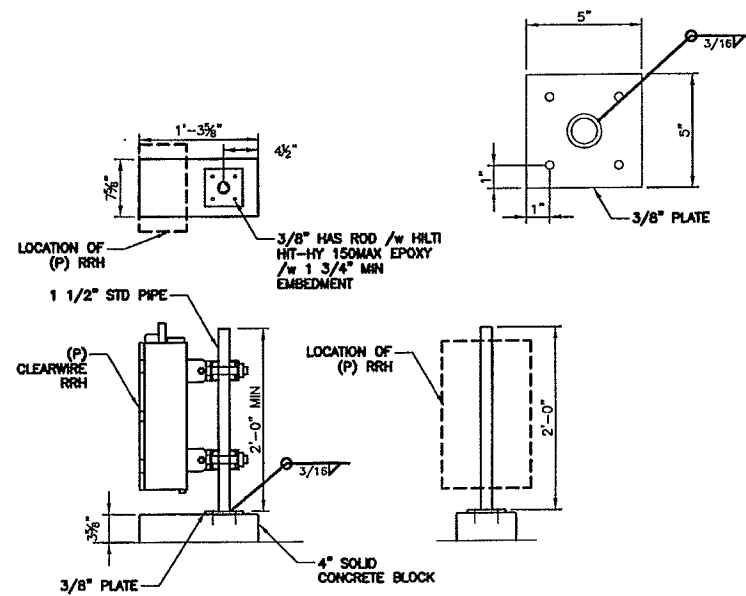
2



**BH & PANEL ANTENNA  
PIPE MOUNT DETAIL**

SCALE: 1" = 1'-0"

3



**RRH MOUNTING DETAIL**

SCALE: 1" = 1'-0"

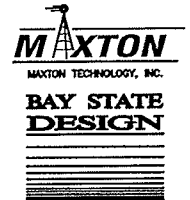
4

(P) = PROPOSED  
(E) = EXISTING

APPLICANT:

**clearw're**

5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033



241 Boston Post Rd. West Phone: 508-229-4100  
Marlborough, MA 01752 Fax: 508-485-5321

SITE NAME:

WESTON MANOR

HOST #:

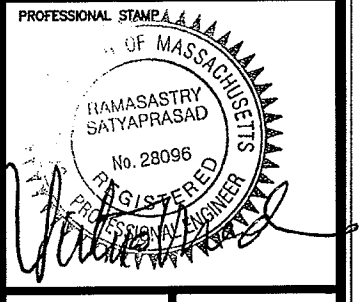
BS13XC671

SITE #:

MA-BOS5089-A

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JOB #:

2900.098

SITE ADDRESS:

15 WESTON AVENUE  
SOMERVILLE, MA 02144

SHEET TITLE:

**STRUCTURAL  
DETAILS**

SHEET NUMBER:

S-1

POWER CALCULATION  
MA-BOS5089

EXISTING SPRINT SERVICE: 480V

EXISTING SPRINT PPC: 100A-2P, 120/240V, MAIN CIRCUIT BREAKER

EXISTING SPRINT PPC CIRCUIT BREAKERS:  
(1) 100A-2P, (2) 60A-2P, (1) 20A, (1) 10A

EXISTING CIRCUIT BREAKER SPACES AVAILABLE: 3

SPRINT DEMAND LOAD: 54.3A (12.5 KW)

PROPOSED CLEARWIRE CABINET REQUIREMENTS: 100A 2P MAIN CIRCUIT BREAKER

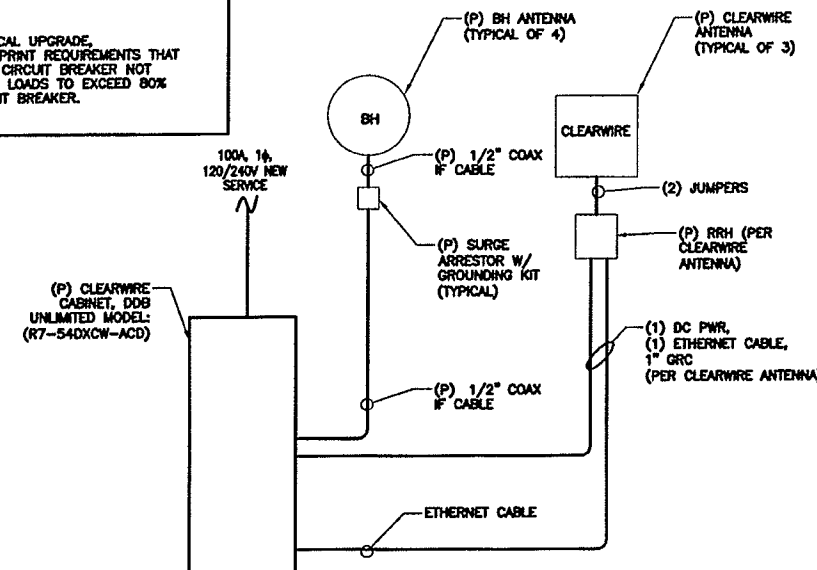
HVAC CALCULATION

N/A

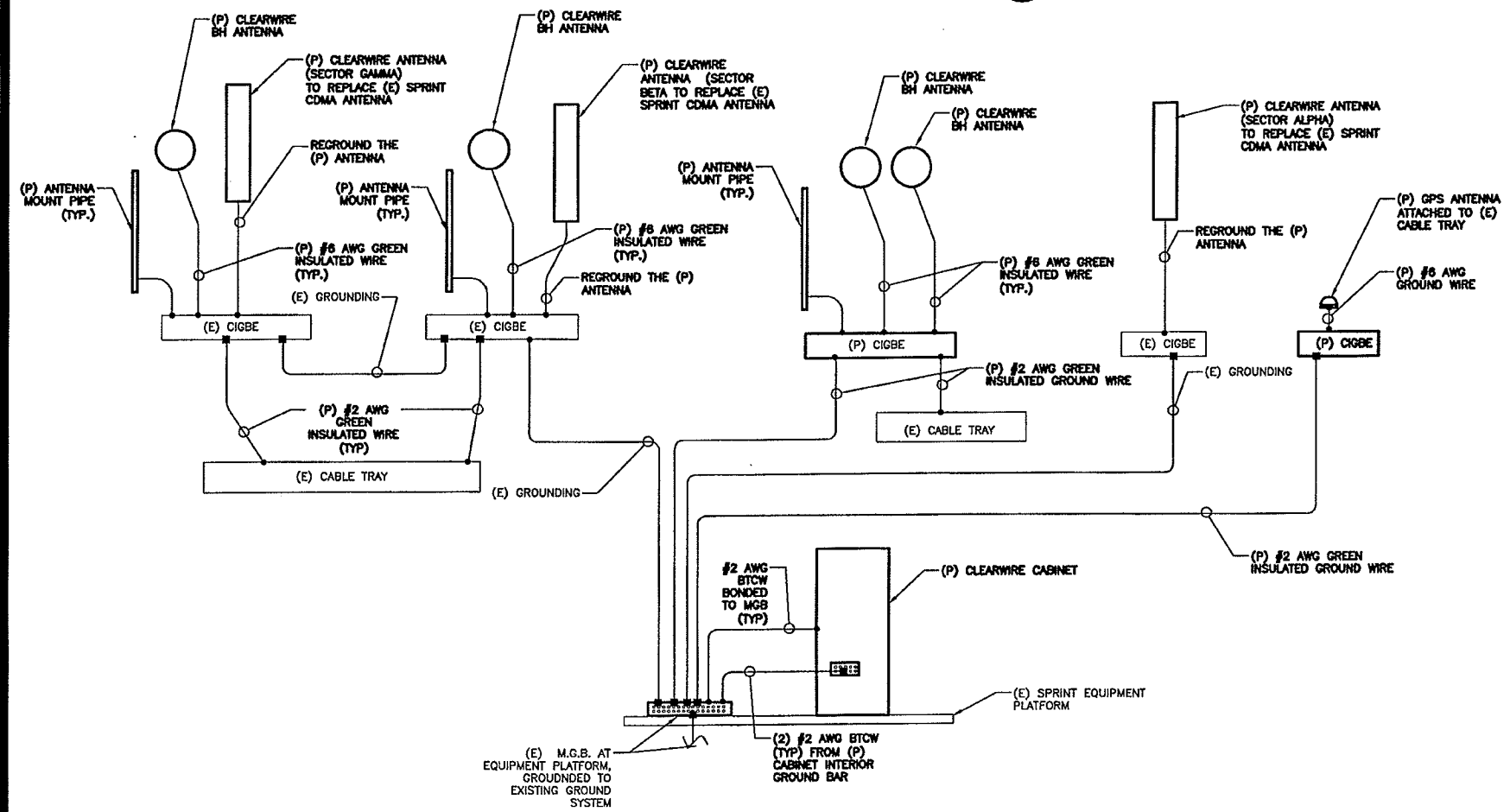
CONCLUSION:

THE ADDITION OF A 100A-2P CIRCUIT BREAKER FOR THE (P) CLEARWIRE OUTDOOR CABINET EXCEEDS THE 80% LIMIT FOR THE EXISTING 100A LOAD CENTER, REQUIRING A POTENTIAL POWER UPGRADE.

NOTE:  
NEEDS ELECTRICAL UPGRADE, BASED UPON SPRINT REQUIREMENTS THAT AN ADDITIONAL CIRCUIT BREAKER NOT CAUSE SUM OF LOADS TO EXCEED 80% OF MAIN CIRCUIT BREAKER.



ELECTRICAL ONE-LINE DIAGRAM  
SCALE: NTS



(P) = PROPOSED  
(E) = EXISTING

GROUNDING SCHEMATIC DIAGRAM  
SCALE: NTS

- GROUNDING SPECIFICATIONS:
- GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
  - ALL GROUNDING DEVICES SHALL BE U.L. APPROVED OR LISTED FOR THEIR INTENDED USE.
  - GROUND WIRES SHALL BE TINNED #2 AWG BARE SOLID Cu UNLESS NOTED OTHERWISE.
  - GROUNDING CONNECTIONS SHALL BE EXOTHERMIC (CADWELD) UNLESS NOTED OTHERWISE. CLEAN SURFACES TO SHINY METAL. WHERE GROUND WIRES ARE CADWELDED TO GALVANIZED SURFACES, SPRAY CADWELD WITH GALVANIZING PAINT.
  - ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. BEND GROUNDING LEADS WITH A MINIMUM 8" RADIUS.
  - PRIOR TO INSTALLING LUGS ON GROUND WIRES, APPLY THOMAS & BETSS KOPR-SHIELD (TM OF JET LUB INC.) PRIOR TO BOLTING GROUND WIRE LUGS TO GROUND BARS, APPLY KOPR-SHIELD OR EQUAL.
  - WHERE BARE COPPER GROUND WIRES ARE ROUTED FROM ANY CONNECTION ABOVE GRADE TO GROUND RING, INSTALL WIRE IN 3/4" PVC SLEEVE, FROM 1'-0" ABOVE GRADE AND SEAL TOP WITH SILICONE MATERIAL.
  - PREPARE ALL BONDING SURFACES FOR GROUNDING CONNECTIONS BY REMOVING ALL PAINT AND CORROSION DOWN TO SHINY METAL. FOLLOWING CONNECTION, APPLY APPROPRIATE ANTI-OXIDIZATION PAINT.
  - GROUNDING WIRE CONNECTIONS SHALL BE 3-CRIMP C-TAP COMPRESSION TYPE. SPLIT BOLTS ARE NOT ACCEPTABLE.
  - GROUND RODS SHALL BE COPPER CLAD STEEL 5/8"x10" SPACED NOT LESS THAN 10' O.C.
  - CONNECTORS SHALL BE CRIMPED USING HYDRAULIC CRIMPING TOOLS.
  - SURFACE CONNECTIONS SHALL BE MADE TO BARE METAL. PAINTED SURFACES SHALL BE FILED TO ENSURE PROPER CONTACT. APPLY NON-OXIDIZING AGENT TO CONNECTIONS.
  - COPPER BUSES SHALL BE CLEANED, POLISHED AND A NON-OXIDIZING AGENT APPLIED. NO FINGERPRINTS OR DISCOLORED COPPER WILL BE PERMITTED.
  - GROUNDING CONDUCTORS SHALL BE RUN THROUGH PVC SLEEVE WHERE ROUTED THROUGH WALLS, FLOORS AND CEILING. ENDS OF CONDUIT SHALL BE GROUNDED. SEAL BOTH ENDS OF CONDUIT WITH SILICONE CAULK.
  - HARDWARE (I.E. NUTS, BOLTS, WASHERS, ECT.) IS TO BE STAINLESS STEEL.
  - EXOTHERMIC WELDS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - THE ENTIRE SYSTEM SHALL BE SOLIDLY GROUNDED USING LOCKNUTS AND BONDING NUTS ON CONDUITS AND PROPERLY BONDED GROUND CONDUCTORS. RECEPTACLES AND EQUIPMENT BRANCH CIRCUITS SHALL BE GROUNDED WITH A FULL SIZED EQUIPMENT GROUNDING CONDUCTOR RUN IN THE CIRCUIT'S CONDUIT.
  - INSTALL GROUND BUSHINGS ON ALL METALLIC CONDUITS AND BOND TO THE EQUIPMENT GROUND BUS IN THE PANEL BOARD.
  - GROUND BARS (SECTOR, COLLECTOR, MASTER) SHALL BE BARE 1/4"x4" COPPER; LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICALLY INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
  - APPLY T&B KOPR-SHIELD OR APPROVED EQUAL PRIOR TO MAKING MECHANICAL CONNECTIONS. CONNECTIONS SHALL BE MADE WITH STAINLESS STEEL BOLTS, NUTS AND LOCK WASHERS 3/8" DIAMETER MIN. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH 'GALVONOX' OR EQUAL.
  - ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANELS, FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE WITH STAINLESS STEEL SELF-TAPPING SCREWS.
  - ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON-CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
  - ALL BOLTS, WASHERS AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
  - THE CONTRACTOR SHALL ENGAGE AN INDEPENDENT ELECTRICAL TESTING FIRM TO TEST AND VERIFY THAT RESISTANCE TO EARTH DOES NOT EXCEED 5.0 OHMS. PROVIDE A COPY OF TESTING REPORT, INCLUDING THE METHOD AND INSTRUMENTS USED TO VERIFY RESISTANCE TO CLEARWIRE REPRESENTATIVE.
  - BOND CABINET THROUGH THE MAIN GROUND BAR.
  - THE CONTRACTOR TO SECURE A COPY OF ANY SOIL RESISTIVITY AND/OR SITE RESISTANCE TO EARTH TESTING PREVIOUSLY PERFORMED. IF NO RECORDS ARE AVAILABLE A FOUR POINT SOIL RESISTIVITY TEST SHALL BE PERFORMED TO ASSURE 5 OHMS OR LESS WITH SOIL RESISTIVITY UP TO 50,000 OHM-CM.
  - WHEN CLEARWIRE ANTENNAS EXCEED IN ELEVATION THE EXISTING LIGHTNING RODS THEN LIGHTNING RODS SHALL BE ADDED TO CLEAR WIRE ANTENNAS AS DETAILED IN SNP-312-203.
  - GROUNDING SYSTEM SHALL MEET CLEARWIRE GROUNDING STANDARDS.

APPLICANT:

clearw're

5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033

MAXTON  
MAXTON TECHNOLOGY, INC.

BAY STATE  
DESIGN

BAY STATE DESIGN, INC.  
Architects - Engineers

241 Boston Post Rd. West Phone: 508-228-4100  
Marlborough, MA. 01752 Fax: 508-485-5321

SITE NAME:

WESTON MANOR

HOST #:

BS13XC671

SITE #:

MA-BOS5089-A

CONSTRUCTION DWG'S

1	10/28/09	REV. PER COMMENTS
0	10/14/09	FOR CONSTRUCTION
A	07/10/09	ISSUED FOR REVIEW

PROFESSIONAL STAMP

COMMONWEALTH OF MASSACHUSETTS  
TRICHUR  
A.  
VENKATARAMAN  
No. 28780  
REGISTERED  
PROFESSIONAL ENGINEER

DRAWN BY: KO CHECKED BY: JT/TAV

JOB #: 2800.098

SITE ADDRESS:  
15 WESTON AVENUE  
SOMERVILLE, MA 02144

SHEET TITLE:  
ELECTRICAL &  
GROUNDING  
SCHEMATIC

SHEET NUMBER:  
E-1

APPLICANT:  
**clearw're**  
5808 LAKE WASHINGTON BLVD. NE  
SUITE 300  
KIRKLAND, WA 98033



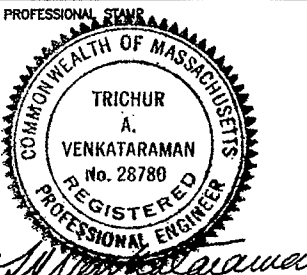
SITE NAME:  
**WESTON MANOR**

HOST #:  
**BS13XC671**

SITE #:  
**MA-BOS5089-A**

**CONSTRUCTION DWG'S**

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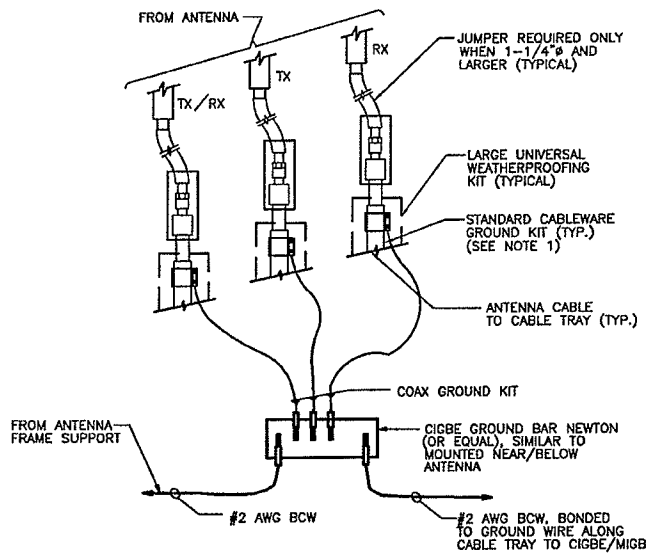


DRAWN BY: KO  
CHECKED BY: JY/TAV  
JOB #: 2900.098

SITE ADDRESS:  
**15 WESTON AVENUE  
SOMERVILLE, MA 02144**

SHEET TITLE:  
**ANTENNA  
GROUNDING  
DETAILS**

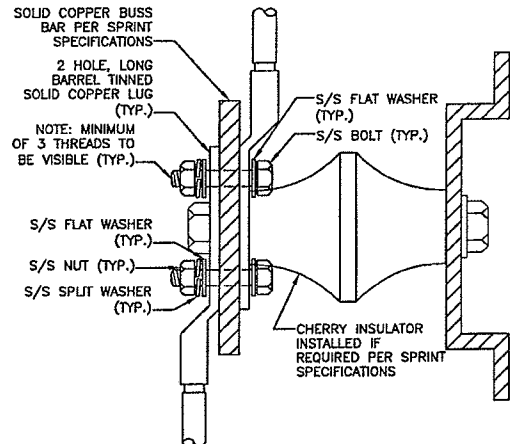
SHEET NUMBER:  
**E-2**



**CONNECTION OF GROUND  
WIRES TO GROUNDING BAR**

SCALE: N.T.S.

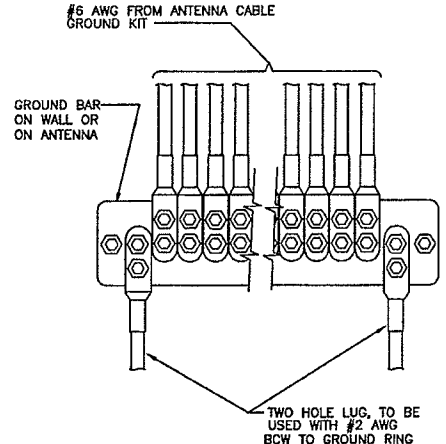
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**GROUND LUG DETAIL**

SCALE: N.T.S.

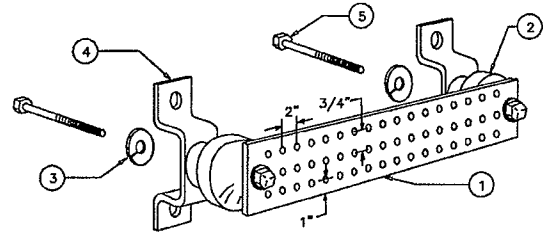
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**INSTALLATION OF GROUND  
WIRE TO GROUND BAR**

SCALE: N.T.S.

3

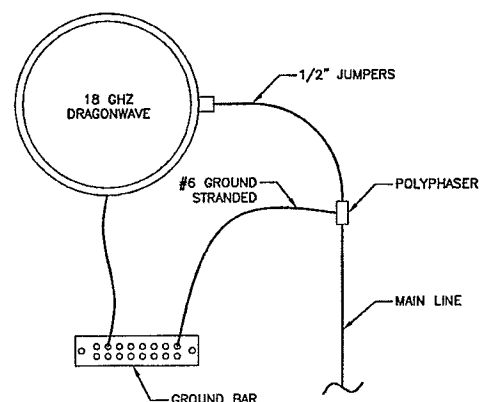


**GROUNDING - STANDARD  
DETAIL GROUND BAR**

SCALE: N.T.S.

4

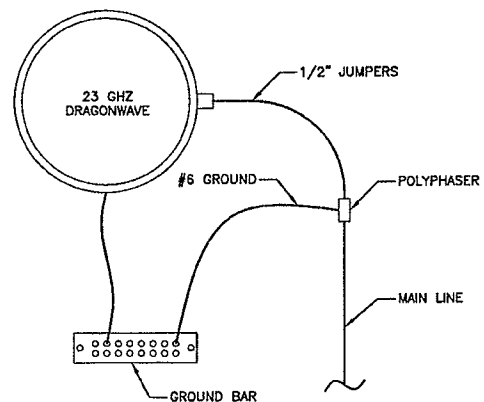
- LEGEND
- 1- COPPER HARGER GROUND BAR, 1/4"X 4"X 20", GBIT 14420 J 2-7 HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
  - 2- STANDOFF INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4
  - 3- 5/8" LOCKWASHERS, OR EQUAL
  - 4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-6056 OR EQUAL
  - 5- 5/8-11 X 1" HEX HEAD CAP SCREW BOLT
- NOTE:  
ALL BOLTS, NUTS, WASHERS, AND LOCK WASHERS SHALL BE 18-8 STAINLESS STEEL.



**18 GHZ DRAGONWAVE  
GROUNDING**

SCALE: N.T.S.

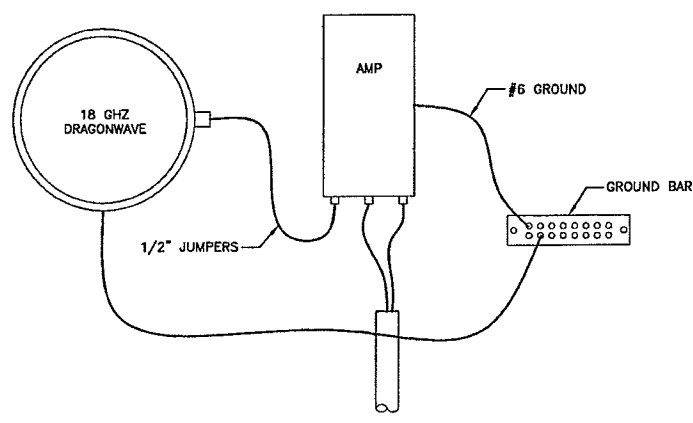
5



**23 GHZ DRAGONWAVE  
GROUNDING**

SCALE: N.T.S.

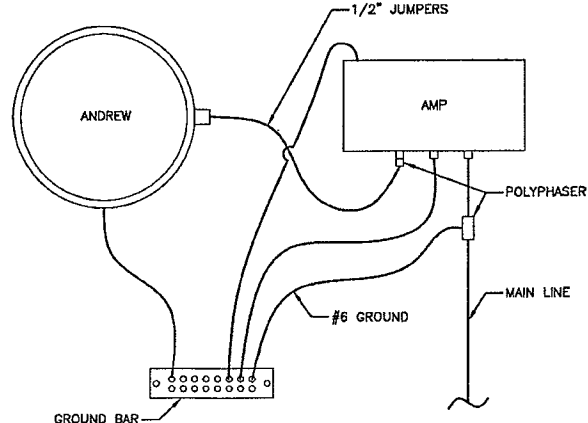
6



**18 GHZ DRAGONWAVE/  
AMP GROUNDING**

SCALE: N.T.S.

7



**ANDREW GROUNDING**

SCALE: N.T.S.

8